

CLAIMS:

1. An isolated nucleotide sequence having at least  
5 70% identity to SEQ ID NO:1 or to a fragment of said  
sequence which specifically hybridizes to the complement of  
SEQ ID NO:1.

2. An isolated nucleotide sequence comprising a  
10 sequence encoding a mutant hepatitis B surface antigen  
(HBsAg) "a" determinant in which the mutation, as compared  
to the wildtype sequence, is the substitution of the amino  
acid Ala for the amino acid Thr at position 123 of the HBsAg  
sequence.

3. A purified polypeptide encoded by said isolated  
15 nucleotide sequence of claims 1 or 2.

4. A purified polypeptide having at least 70%  
20 identity to SEQ ID NO:2.

5. A vector comprising said isolated nucleotide  
sequence of claims 1 or 2.

25 6. A host cell comprising said vector of claim 5.

7. A method for producing a polypeptide comprising a  
modified HBV "a" determinant comprising the steps  
of incubating said host cell of claim 6 for a time and under  
30 conditions sufficient for expression of the polypeptide.

8. An antibody which binds to a mutant HBsAg "a"  
determinant and does not cross-react with the native HBsAg  
"a" determinant, wherein the mutation of said mutant "a"  
35 determinant, as compared to the wildtype sequence, is the

substitution of the amino acid Ala for the amino acid Thr at position 123 of the HBsAg sequence.

9. An isolated mutant hepatitis B virus, wherein said  
5 virus has a modified HBsAg "a" determinant comprising a substitution of the amino acid Ala for the amino acid Thr at position 123 of the HBsAg sequence.

10. A tissue culture-grown cell infected with said  
10 mutant virus of claim 9.

11. An immunogenic composition comprising the virus of claim 9 or said polypeptide of claim 3.

12. A polynucleotide probe comprising a Hepatitis B  
15 Virus genomic sequence encoding a modified HBsAg "a" determinant, wherein said modified HBsAg "a" determinant results from substitution of alanine for guanine at position 561 of the nucleotide sequence of said Hepatitis B Virus.

13. The polynucleotide probe of claim 12, wherein said  
20 genomic sequence encoding a modified HBsAg "a" determinant comprises SEQ ID NO:1.

14. A kit for determining the presence of mutant HBV  
25 polynucleotides comprising said polynucleotide probe of claim 12 and a container.

15. A kit for determining the presence of mutant  
30 hepatitis B surface antigen or antibody comprising a container containing said antibody of claim 8.

16. A kit for determining the presence of mutant  
hepatitis B virus antigen or antibody comprising a container  
35 and said polypeptide of claim 3.

17. A method for detecting mutant HBV nucleic acids in a test sample comprising the steps of:

a) reacting a test sample suspected of containing mutant HBV nucleic acids with said probe of claim 12 under conditions and for a time sufficient to allow formation of a probe/mutant HBV nucleic acid complex; and

b) detecting said complex, presence of said complex indicating presence of mutant HBV nucleic acids in said sample.

18. A method for detecting HBV antibodies in a test sample comprising:

a) contacting a test sample suspecting of containing said antibodies with said polypeptide of claim 3 for a time and under conditions sufficient to allow formation of antibody/polypeptide complexes; and

b) detecting said antibody/polypeptide complexes, presence of said complexes indicating presence of said antibodies in said test sample.

19. A method for detecting mutant hepatitis B surface antigen (HBsAg) "a" determinant in a test sample comprising the steps of:

a) reacting a test sample suspected of containing mutant HBsAg "a" determinant with said antibody of claim 8 for a time and under conditions sufficient to allow formation of antigen/antibody complexes; and

b) detecting said antigen/antibody complexes, presence of said complexes indicating presence of mutant hepatitis B surface "a" determinant in said test sample.

20. The method of claim 19 wherein said HBsAg encodes the amino acid sequence comprising SEQ ID NO:2.

5 21. The method of claim 19 further comprising the steps of:

10 c) contacting said antigen/antibody complexes with a conjugate comprising a second antibody attached to a signal-generating compound capable of generating a detectable signal for a time and under conditions sufficient to allow the formation of second antibody/antigen/antibody complexes; and

15 d) detecting presence of said signal generated by said signal-generating compound, presence of said signal indicating presence of said mutant hepatitis B surface antigen (HBsAg) "a" determinant in said test sample.

20 22. An isolated nucleotide sequence having at least 70% identity to SEQ ID NO:4 or to a fragment of said sequence which specifically hybridizes to the complement of SEQ ID NO:4.

25 23. A purified polypeptide encoded by said isolated nucleotide sequence of claim 1.

30 25. A purified polypeptide having at least 70% identity to SEQ ID NO:5.

26. A vector comprising said isolated nucleotide sequence of claim 22.

27. A host cell comprising said vector of claim 26.